

MATHEMATICAL PROCESS—SELECTING TOOLS AND COMPUTATIONAL STRATEGIES



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Students will select and use a variety of concrete, visual and electronic learning tools and appropriate computational strategies to investigate mathematical ideas and to solve problems.

Students need to develop the ability to select the appropriate electronic tools, manipulatives and computational strategies to perform particular mathematical tasks, to investigate mathematical ideas and to solve problems.

ROLE OF STUDENTS

Select Tools

- Understand when mental arithmetic or a pencil-and-paper calculation or estimation is more appropriate than technology.
- Use an appropriate tool when:
 - An exact answer is needed.
 - Computation involves several numbers or numbers with more than one digit.
 - The numbers are not easily calculated mentally.
- Use technology to explore, gather, display, manipulate, and present data in a variety of ways.
- Use manipulatives and/or technology to develop understanding.

Select Computational Strategies

- Develop and use a personal set of referents for measurement, e.g., 1 cm is approximately the width of a baby finger.
- Select different computational strategies depending on the numbers involved, e.g., 25×16 , 23×16 , 19×16 .

SAMPLE QUESTIONS

- How did the learning tool you chose contribute to your understanding/solving of the problem? Assist in your communication?
- In what ways would (name a tool) assist in your investigation/solving of this problem?
- What other tools did you consider using? Explain why you chose not to use them.
- Explain why you chose this computational strategy.
- Think of a different way to do the calculation that may be more efficient.
- What estimation strategy did you use? Was your result sufficiently accurate for the question?

SAMPLE FEEDBACK

- You have chosen a different tool than other students. Why did you choose this one?
- You have selected an appropriate tool but an error has occurred. Review your procedure to identify the error, e.g., key entry on a calculator, improper use of features such as constructing versus drawing in GSP®.
- Share your solution with someone who has used a different tool and discuss the merits of each.
- Use (name a tool) and see how it helps you solve the problem.
- Please model the computational strategy you used for a classmate.
- Please think aloud while you apply the strategy so I can learn why you are getting this answer.
- Try another computational strategy and see if your result is the same.